

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Comparing the validity of the Modified Modified Ashworth scale (MMAS) and the Modified Tardieu scale (MTS) in the assessment of wrist flexor spasticity in patients with stroke- protocol for a neurophysiological study
AUTHORS	Nakhostin Ansari, Nouredin; abolhasani, hamid; Naghdi, Soofia; Mansouri, Korosh; Ghotbi, Nastaran; Hasson, Scott

VERSION 1 - REVIEW

REVIEWER	Ratanapat Chanubol Senior professional level of Physiatrist Prasat Neurological Institute Thailand
REVIEW RETURNED	15-Jul-2012

THE STUDY	<p>1.It is better to fill-in more detail about the setting, number of population in the abstract.</p> <p>2.There is only the strengths but no any limitation report in this present.</p> <p>3. From page 5, line 4-9, the strength of correlation between MMAS score and neurophysiologic evidence is fair level. However, there is a study demonstrate that the neurophysiologic evidence (Hmax/Mmax ratio) was rejected to be measure spasticity because it is associated with, but not evaluative of spasticity (Elovic EP, 2004). Also from the introduction and conclusion of this present, there is a paucity of validity study of all measurements (MMAS, MTS and neurophysiologic evidence). The criterion validity is used to demonstrate the accuracy of a measure comparing with another measure which has been demonstrated to be valid, so!! which measurements is the demonstrated valid measurement in this study?</p> <p>4. The H-reflex magnitude can change dramatically during contraction or stretch of agonist and antagonist muscles. How the author design to eliminate this effect.</p> <p>5. From general study, the results of the MTS and MAS have been found to be more consistent in ankle joint than the other joint. Please give the reason for choosing wrist joint in this study.</p> <p>6. Is a assessor was blinded during the all main outcome measurement? If this is the same person, how can the authors reduced the measurement bias between the MMAS, MTS and the neurophysiological measurement</p> <p>7. Does the clinical and neurophysiological tests was performed in the same day or not? Because of timing (even different time in the same day) can be shown the varying of spastic grade.</p> <p>8. On page 8, please specific the site of reference electrode and the cathod should be proximal to avoid the anodal block.</p>
RESULTS & CONCLUSIONS	1. There should present a correlation table that represent the validity

	<p>which is the main objective.</p> <p>2. From the current evidences, the MTS has been explained as a suitable spastic measurement and some studies found to be valid, however the neurophysiologic study and MMAS are still in doubt. The conclusion might become validate between 2 clinical studies, and 1 clinical and 1 neurophysiological study??</p>
GENERAL COMMENTS	<p>This present is base on the good idea of establishing but it still lack the important result which is the main answer of this study. I cannot see the result of the correlation which represent the validity as the author have been wrote in the statistic method and discuss about the strength of the correlation as highly or strongly correlate, or weakly correlate, etc.</p> <p>On page 5 "Study design" in the line of 40-52, normally, it refer as the RCT, systematic review, observational study, etc..</p> <p>For H-reflex testing, is there normal present in all 32 subjects or not? Please further discuss about this.</p>

REVIEWER	<p>Ayşe Numanoğlu MD. Physiotherapist Teaching Assistant in Bolu Abant İzzet Baysal University Turkey I declare no conflict of interest with authors of this manuscript.</p>
REVIEW RETURNED	23-Jul-2012

THE STUDY	<p>I think the overall study design is not appropriate and adequate to answer the research question. Because for the wrist flexor spasticity measurement with MMAS and MTS we take in the consider both flexor carpi radialis and flexor carpi ulnaris, but with H reflex measurement researcher collect data only from flexor carpi radialis. In this case it is not appropriate to compare MMAS /MTS scores with H reflex measurements. I also have a recommendation for the exclusion criteria; elbow contracture should be added to exclusion criteria because wrist flexor's origo is medial (internal) condyle of the humerus so if patient has contracture in elbow joint it could affect the scores of wrist joint.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer: Ratanapat Chanubol

1.It is better to fill-in more detail about the setting, number of population in the abstract. In the "Abstract" section, under title of " Methods and Analysis", we included it.

2-There is only the strengths but no any limitation report in this present. On page 13, we included the limitation. On page 15, under title of "Strengths and limitations of this study", we included the weakness of the study.

3-From page 5, line 4-9, the strength of correlation between MMAS score and neurophysiologic evidence is fair level. However, there is a study demonstrate that the neurophysiologic evidence (Hmax/Mmax ratio) was rejected to be measure spasticity because it is associated with, but not evaluative of spasticity (Elovic EP, 2004). Also from the introduction and conclusion of this present, there is a paucity of validity study of all measurements (MMAS, MTS and neurophysiologic evidence). The criterion validity is used to demonstrate the accuracy of a measure comparing with another measure which has been demonstrated to be valid, so!! which measurements is the demonstrated

valid measurement in this study? On page 5-6, PARAs starting with "The basic neural circuit in spasticity..." and "The Hslp/Mslp ratio...", we described it.

4-The H-reflex magnitude can change dramatically during contraction or stretch of agonist and antagonist muscles. How the author design to eliminate this effect. Patients will not perform active contractions or stretching. On page 7, under title of 'Procedures', line 3-10, we described the testing condition.

5-From general study, the results of the MTS and MAS have been found to be more consistent in ankle joint than the other joint. Please give the reason for choosing wrist joint in this study. On page 8, para 1, line 1-2, we described why we selected the wrist flexors for testing.

6-Is a assessor was blinded during the all main outcome measurement? If this is the same person, how the authors can reduce the measurement bias between the MMAS, MTS and the neurophysiological measurement. On page 8, para 1, last line, we described that "The tester will be blinded to the neurophysiological data analyses".

7-Does the clinical and neurophysiological tests was performed in the same day or not? Because of timing (even different time in the same day) can be shown the varying of spastic grade. On page 8, para 1, line 3, we described that "Clinical and neurophysiological tests will be performed in a single session".

8-On page 8, please specific the site of reference electrode and the cathod should be proximal to avoid the anodal block. On page 10, Para 1, last line, we described that cathode will be positioned proximal to the anode to prevent anodal block. Para 2, line 4 describes the position of the reference electrode.

9-There should present a correlation table that represent the validity which is the main objective. On page 12, under tile of "Criterion Validity", we described it and included the table 5 (page 25).

10-From the current evidences, the MTS has been explained as a suitable spastic measurement and some studies found to be valid, however the neurophysiologic study and MMAS are still in dout. The conclusion might become validate between 2 clinical studies, and 1 clinical and 1 neurophysiological study? On page 5-6, PARAs starting with "The basic neural circuit in spasticity..." and "The Hslp/Mslp ratio...", we described that the neurophysiological tests would be considered as criteria to evaluate the validity of the clinical measures of the MMAS and the MTS.

11-This present is base on the good idea of establishing but it still lack the important result which is the main answer of this study. I cannot see the result of the correlation which represent the validity as the author have been wrote in the statistic method and discuss about the strength of the correlation as highly or strongly correlate, or weakly correlate, etc. On page 12, under tile of "Criterion Validity", we described it and included the table 5 (page 25).

12-On page 5 "Study design" in the line of 40-52, normally, it refer as the RCT, systematic review, observational study, etc. In the "Abstract", under title of "Methods and Analysis", line line 2-3, and on page 6, under title of "Study Design", line 1, we amended it.

13-For H-reflex testing, is there normal present in all 32 subjects or not? Please further discuss about this. This is a correlation study to evaluate the relation between the clinical scores and

neurophysiological data in terms of H-reflex tests. Values in the normal range may be observed.

Reviewer: Ayşe Numanoglu

1-I think the overall study design is not appropriate and adequate to answer the research question. Because for the wrist flexor spasticity measurement with MMAS and MTS we take in the consider both flexor carpi radialis and flexor carpi ulnaris, but with H reflex measurement researcher collect data only from flexor carpi radialis. In this case it is not appropriate to compare MMAS /MTS scores with H reflex measurements. I also have a recommendation for the exclusion criteria; elbow contracture should be added to exclusion criteria because wrist flexor's origo is medial (internal) condyle of the humerus so if patient has contracture in elbow joint it could affect the scores of wrist joint. On page 5, para2 starting with "The basic neural circuit in spasticity...", we described that the basic neural circuit in spasticity is stretch reflex with various changes including alpha motor neuron hyperexcitability. The H-reflex can be used to objectively measure the alpha motor neuron excitability in any spastic muscle, irrespective of spastic muscles tested clinically. If hyperexcitability is the main pathophysiology observed in the muscle spasticity, clinical testing results of a spastic muscle or muscle group should be correlated with objective measures of spasticity. In a study by Kumru et al (2011) [Clinical Neurophysiology 122: 1229–1237], Modified Ashworth Scale (MAS) was measured for elbow flexors and extensors and the H-reflex was obtained from flexor carpi radialis. Also, knee flexors and extensors were measured clinically using the MAS, and the H-reflex was measured from soleus muscle.

On page 7, under title of "Participants", line 6, elbow contracture included as an exclusion criteria.